

REMARKS

In view of both the amendments presented above, the accompanying Declaration of co-inventor Professor Adriaan Beukers, and the following discussion, Applicants submit that none of the claims now pending in the application is anticipated under the provisions of 35 U.S.C. § 102, or fails to comply with 35 U.S.C. § 112. Thus, Applicants believe that all of these claims are now in allowable form.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, the Examiner should telephone Peter A. Luccarelli Jr. at (732) 542-7800 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Request for Interview

Prior to examination of the amended claims, Applicants request the courtesy an attorney interview to discuss the reference of record forming the basis of all rejections under 35 U.S.C. § 102(b) and the present invention as claimed herein. It is believed that the complexity of the drawings and specifications of both the present application and cited reference forming the basis of the outstanding rejections (especially with respect to description of structural orientation of reinforcing fibers forming part of the claimed composite structures) are most efficiently addressed as part of a conversation. This belief is reinforced by the differences of interpretation of

the cited reference expressed by co-inventor, Professor Adriaan Beukers (see his accompanying Declaration), and the PTO in the outstanding September 2010 Office Action. The Examiner is requested to telephone the undersigned attorney to arrange an interview.

Claims Status and Discussion of the Present Invention

Claims 23-28 and 39-48 are presently in the application. The Examiner withdrew claims 45-48 from further consideration. Claims 23 and 28 are independent claims. All other pending claims are directly or indirectly dependent on claim 23.

Claim 28 is amended is recast as an independent claim that incorporates all recitations of its base claim 23. In paragraph 17 of the Outstanding Office Action the Examiner indicated that claim 28 subject matter would be allowable if rewritten in independent form.

Applicants' invention is directed to a fiber-reinforced gas or fluid-tight structure with a varying radius with regard to an axis of symmetry such that the body comprises a number of integrally formed convex and concave surface sections, or at least one concave section, and by overwinding the body with filaments such that at least one concave surface section is continuously overwound with a fiber as an isotensoide, a substantially isotensoidal body is obtained which has excellent performance in terms of volume, pressure, and mass.

This performance is attained since in isotensoidal bodies the applied fibers are tensioned in exactly the same magnitude, so that optimal use of material properties is made. Accordingly, the body may endure high pressures and has a relatively large shape stability. Variations of the pressure inside the body results in variation of the envelope stiffness. By the formation of rotationally symmetrical bodies with varying radius in an isotensoidal way, advantageous applications may be found. More specifically, elongated objects can be formed making the bodies available for a wide variety of applications. The combination of flexibility of the body and the ability to endure pressure loadings makes it suitable for flexible pipes and hydraulic applications.

The advantages and distinctions of the present invention are reflected in the amended claims presented herein. Sole independent claim 23 recites that the structure as an "integrally formed gas or fluid-tight body having a continuous outer circumferential surface ... wherein the radius of the body outer surface varies [and defines] ... at least one concave surface section ... and one convex surface section ... [wherein the] concave surface section about its entire outer surface spanning its local minimum radius is continuously overwound with a fibre filament as an isotensoide" (emphasis added).

Claim 23 Objection

The Examiner objected to an informality in claim 23, line 16. The Examiner's suggestion to change that line to recite: "wherein the at least one concave surface

section" has been adopted in this amendment. Citation of and suggested correction of the error is noted with appreciation.

Rejections Under 35 U.S.C. § 112

The U.S. Patent and Trademark Office rejected claim 23 under 35 U.S.C. § 112, first paragraph as allegedly lacking support in the specification for amended language "unitized integrally formed gas or fluid tight body". Claim 23 as amended herein deletes "unitized", on order to eliminate the possible inference suggested by the Examiner that the word "unitized" might be interpreted as meaning a frame or some other structure for the body to be formed with. As noted in Paragraph 4 of the accompanying Declaration of Professor Adriaan Beukers ("Beukers Declaration"), the remainder of the recitation includes "gas or fluid tight body" which is directly supported by the specification, published WO 2004/015312 page 1, lines 3-5. Paragraphs 4 and 5 of the Beukers Declaration cite additional support in the specification as filed for the amended claim recitation. Reconsideration and withdrawal of the outstanding 35 U.S.C. § 112 rejection is respectfully solicited.

Rejections Under 35 U.S.C. § 102(b)

Claims 23-28 and 39-44 stand rejected under 35 U.S.C. § 102(b) as being anticipated by EP 0 626 338 A1 ("EP 338"). It is respectfully urged that the outstanding anticipation rejection be withdrawn against all of the claims in view of the foregoing amendment to claim 23 and

the accompanying Beukers Declaration. As noted above, the independent claim 23 recites that the structure is an "integrally formed gas or fluid-tight body having a continuous outer circumferential surface ... wherein the radius of the body outer surface varies [and defines] ... at least one concave surface section ... and one convex surface section ... [wherein the] concave surface section about its entire outer surface is continuously overwound with a fibre filament as an isotensoide" (emphasis added).

The EP 338 reference shows elliptical-shaped fiber-reinforced pressurized structures that only have a convex outer surface. See Paragraph 8 of the Beukers Declaration. The Examiner's correction of the characterization of the EP 338 structures as being elliptical shaped rather than ball-shaped in paragraph 20 of the Office Action is noted with appreciation. In contrast, the present invention as recited in claim 23 has a unitized outer surface that defines both convex and concave outer surface portions. Further at least one of the concave surface portions is continuously over-wound with fiber filament as an isotensoide. As noted in Paragraph 11 of the Beukers Declaration, at the time of filing of the EP 338 application the invention therein did not contemplate having those features recited in claim 23.

In Paragraph 6 of the Office Action, the Examiner cites Figs. 8, 10, 11a and 11b, page 2, line 58 and page 4, lines 12 and 54 of the EP 338 reference as anticipating the present invention. As refuted in Paragraphs 8-14 of the Beukers Declaration, the structures shown and described in the Examiner's citations of EP 338 are individual, discrete,

separate elliptical shaped structures with over-winding. The single EP 338 structures are abutted together and held by auxiliary devices. The abutting individual structures do not have a continuous outer surface that includes at least one convex and one concave portion. Rather, the EP 338 reference shows a series of independent separate and discrete discontinuous surfaces serially joined together, and as such there are no concave surfaces that are continuously overwound with fibre filament as an isotensoide. The EP 338 structure of Figs. 8, 10, 11a and 11b thus has its structural integrity limited to the strength of the joining elements that string together the separate discontinuous balls. In contrast the invention as recited in claim 23 derives structural strength from the continuously overwound fibre filament elements along the entire structure's surface.

Applicants note that claims 24-27 and 39-48 are dependent claims that refer to independent base claim 23. The dependent claims comprise all of the elements found in claim 23, which has been argued to be patentable over the EP '338 reference. Hence the dependent claims must also be patentable over the EP '338 reference. The Examiner's additional rejections of pending claims set forth in Paragraphs 7-16 are refuted in Paragraphs 14-18 of the Beukers Declaration. The observations of Professor Beukers are incorporated herein by reference as further argument why the dependent claims 24-27 and 39-48 rejections should be reconsidered and withdrawn.

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Applicants reiterate their request for reconsideration and withdrawal of the outstanding restriction requirement respecting claims 45-48 (former claims 35-38) which were accidentally withdrawn during the response to a prior office action indicating a restriction requirement. As the Examiner had properly stated, Group III consisted of claims 23-38 and were drawn to a product. At that time, the Applicants selected Group III, but only listed claims 23-28 in the response. Thus, the Applicants inadvertently cancelled claims 29-38. In accordance with the USPTO procedures, these claims are being introduced as new claims numbered 39-48. Applicants again note that claims 45-48 are all dependent on claim 23. If the outstanding rejection of the independent claim 23 is withdrawn and the claim is allowed, it follows that the dependent claims should also be allowable.

In light of the foregoing contentions of Applicants, it is urged that the rejection of claims 23-28 and 39-48 be withdrawn and that claims be allowed and the application passed to issue.

In view of both the amendments presented above and the following discussion, the Applicants submit that none of the claims now pending in the application is anticipated under the provisions of 35 U.S.C. § 102. Thus, the Applicants believe that all of these claims are now in allowable form.

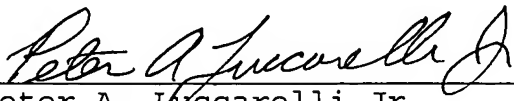
If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, the Examiner

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should telephone Peter A. Luccarelli Jr. at (732) 542-7800
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Respectfully submitted,

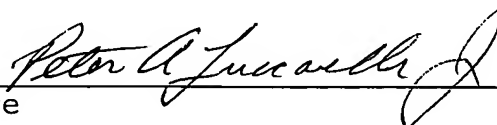
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